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INTRODUCTION TO BIOLOGY

TEST 1

1. Removal or degradation of pollutants by the living organisms is called?

- A: Integrated management
- B: Environmental control
- C: Eugenics
- D: Bioremediation

2. Kidney is an example of?

- A: Tissue
- B: Organ
- C: Cellular system
- D: Organism

3. Which branch of biology deals with the structure of cells and their organelles?

- A: Microbiology
- B: Molecular biology
- C: Parasitology
- D: Human biology

4. Which of the following shows the correct sequence?

- A: Observation -> Hypothesis ->Law -> Theory
- B: Hypothesis -> Observation -> Theory -> Law
- C: Hypothesis -> Observation -> Law -> Theory
- D: Observation -> Hypothesis -> Theory -> Law

5. Population of different species living in the same habitat form a?

- A: City
- B: Country
- C: Population
- D: Community

6. Which of the following is a correct order?

- A: Cell -> Organ -> Tissue -> Organism
- B: Tissue -> Organ -> Cell -> Organism
- C: Cell -> Tissue -> Organ -> Organism
- D: Cell -> Tissue -> Organism -> Organ

7. A tentative explanation of observations is called?

- A: Reasoning
- B: Hypothesis
- C: Theory
- D: Law

8. Which component of the cell is concerned with cell secretion?

- A: Plasma Membrane
- B: Golgi complex
- C: Cytoskeleton
- D: Mitochondria

9. Which branch of biology deals with the study of organism in relation to its environment?

- A: Freshwater biology
- B: Marine biology
- C: Environmental biology
- D: Biotechnology

10. Starch is an example of?

- A: Micromolecule
- B: Macromolecule
- C: Mid level molecule
- D: Human molecule

11. Genetically identical copies of organisms are called?

- A: Twins
- B: Transgenics
- C: Clones
- D: Identicals

12. Biotechnology deals with which of the following?

- A: Use of living organisms in various processes.
- B: Study of protozoa.
- C: Water bodies in oceans.
- D: Evolution.

13. Study of life in sea and oceans is called?

- A: Marine biology
- B: Freshwater biology
- C: Sea biology
- D: Microbiology

14. Necessity of a nutrient to a plant is tested through which of the following methods?

- A: Hydroponic culture.
- B: Hydrophobic culture.
- C: Integrated disease management.
- D: Biological control.

15. Polio shots are an example of what type of disease control?

- A: Drug treatment
- B: Gene therapy
- C: Immunization
- D: Preventive measures

16. Fresh water biology is the study of?

- A: Organisms living in fresh water.
- B: Physical parameters of freshwater bodies.
- C: Chemical parameters of fresh water bodies.
- D: All of the above.

17. Pasteurization is used for which of the following?

- A: Improving milk nutrients
- B: Purifying milk
- C: Preserving milk
- D: All of the above.

18. Population of different species (plants and animals) living at the same habitate in the same time form a:

- A: Ecosystem
- B: Community
- C: Biosphere
- D: Microsystem

TEST 2

1. Which of the following is not a viral disease?

- A: Polio
- B: Tetanus
- C: Small pox
- D: Mumps

2. Pasteurization technique is widely used for preservation of:

- A: water
- B: Milk products
- C: Meat
- D: Vaccines

3. Which of the following is used in treating cancer?

Antibiotics

Radiotherapy

Chemotherapy

- A: ii only
- B: iii only
- C: ii and iii only
- D: i, ii and iii

4. Clones can be produced by which of the following techniques?

- A: Asexual reproduction
- B: Tissue culture
- C: Both of A and B
- D: None of the above.

5. Which of the following is true about antibiotics?

- A: They kill viruses.
- B: They kill bacteria.
- C: They kill both viruses and bacteria.
- D: They cannot kill viruses and bacteria.

6. The production of genetically identical copies of organisms by asexual reproduction is called:

- A: Genetic engineering
- B: Cloning
- C: Integrated disease management
- D: Hydroponic culture technique

7. The part of body which forms structural and functional unit and is composed of more than one tissue is called:

- A: Organelle
- B: Organ
- C: Organ system
- D: Whole organism

8. A method in which pests are destroyed by using some living organisms or natural enemies is called:

- A: Integrated disease management
- B: Bilogical control
- C: Pasteurization
- D: Genetic engineering

9. Which of the following statement is correct?

- A: Complexity of organ systems in the animals is more than that in the plants.
- B: Complexity of organ systems in the animals is less than that in the plants.
- C: Complexity of organ systems in the animals is same as that in the plants.
- D: Complexity of organ systems in the animals may be more or less than that in the plants.

10. Which of the following has the highest number of known species?

- A: Insects
- B: Animals
- C: Plants
- D: Protozoa

11. Which of the following statement is true?

- A: Prokaryotes have limited number of organelles in their cytoplasm.
- B: Prokaryotes have a large number of organelles in their cytoplasm.
- C: Eukaryotes have limited number of organelles in their cytoplasm.
- D: Both Prokaryotes and Eukaryotes have roughly equal number of organelles in their cells.

12. Irrefutable theory is called?

- A: Observation
- B: Hypothesis
- C: Deduction
- D: Law

13. First vaccination was developed using which of the following virus?

- A: Small pox virus
- B: Cowpox virus
- C: Polio virus
- D: Yellow fever virus

14. Use of bacteria in milk products is an example of which branch of biology?

- A: Microbiology
- B: Biotechnology
- C: Parasitology
- D: Molecular biology

15. Chemicals produced by microoragnisms which are capable of destroying the growth of microbes are called:

- A: Antigen
- B: Biocidal
- C: Antibiotics
- D: Antiseptics

16. Communal life of humans is studied in which branch of biology?

- A: Human biology
- B: Social biology
- C: Environmental biology
- D: All of the above

17. Roughly how many species are currently known to science?

- A: 500,000
- B: 900,000
- C: 2,000,000
- D: 2,500,000

18. The study of how the H1N1 virus is transmitted is done under which branch of biology?

- A: Microbiology
- B: Molecular biology
- C: Parasitology
- D: Biotechnology

19. Which of the following is the most accurate definition of population?

- A: A group of living organisms living in the same place at different times.
- B: A group of living organisms living in the same place at the same time.
- C: A group of living organisms of the same species living in the same place at the same time.
- D: A group of humans living in the same place at the same time.

20. Which of the following carbon containing molecule is an example of inorganic compound?

- A: CO_2
- B: C_6H_6
- C: $C_6H_{12}O_6$
- D: They are all organic as they all contain C.

TEST 3

1. **A large community determined by tropical rain forest is an example of?**

- A: Population
- B: Community
- C: Species
- D: Biome

2. **"All animals have four legs. So any living organism with four legs is an animal." The reasoning is an example of?**

- A: Hypothesis
- B: Deductive reasoning
- C: Inductive reasoning
- D: Wrong reasoning

3. **An unbroken series of species arranged from ancestor to descendant is called?**

- A: Heredity linkage
- B: Biome lineage
- C: Evolution series
- D: Phyletic lineage

4. **Which of the following statement is most accurate?**

- A: Animals may reproduce naturally by cloning.
- B: Plants never reproduce naturally by cloning.
- C: Insects never reproduce naturally by cloning.
- D: Insects and plants may reproduce naturally by cloning.

5. **Morphology is a sub-branch of which of the following?**

- A: Social biology
- B: Biotechnology
- C: Microbiology
- D: Human biology

6. **A large regional community primarily determined by climate is called?**

- A: Population
- B: Community
- C: Biome
- D: All of the above

7. **Hammer fish was brought into the Michigan lake to eat up fast growing algae. This is an example of which of the following?**

- A: Integrated disease management
- B: Biological control
- C: Hydrophonic control
- D: Hydrophobic control

8. **Which six elements account for 99% of the human body mass?**

- A: O, C, H, Ca, P, Na
- B: O, C, H, Ca, N, Na
- C: O, C, H, N, Na, I
- D: O, C, H, N, Ca, P

9. **Jigambu is a strange viral infection. Which of the following treatment / prevention would you recommend against Jigambu?**

- A: Antibiotics
- B: Chemotherapy
- C: Radio therapy
- D: Vaccination

10. **The number of commonly occuring bioelements is?**

- A: 16
- B: 20
- C: 25
- D: 28

11. In gene therapy, normal genes are inserted into the host through which of the following?

- A: Bone marrow cells
- B: Red blood cells
- C: White blood cells
- D: Muscle tissues

12. "Eating greasy food cause pimples". This is an example of?

- A: Hypothesis
- B: Theory
- C: Law
- D: None of the above

13. Which of the following is the most abundant element in the human body?

- A: Oxygen
- B: Carbon
- C: Hydroden
- D: Calcium

14. Which of the following is related to cloning?

Replacement of the nucleus of an early embryo with a new nucleus of the same species

Division of early embryo into two or more embryos

Replacing genes in the host cell

- A: i and ii only
- B: i and iii only
- C: ii and iii only
- D: i, ii and iii

15. "Crocodile is a reptile and can survive in water. So all reptiles can survive in water." This statement is an example of?

- A: Theory
- B: Deductive reasoning
- C: Inductive reasoning
- D: Wrong reasoning

TEST 4

1. Microbiology is a branch of biology that deals with?

- A: Cells and their organelles.
- B: Interaction between organism and its organic and inorganic environment.
- C: Study of parasites.
- D: Study of protozoa, bacteria, viruses etc.

2. What kind of association is seen in lichens?

- A: Commensalism
- B: Parasitism
- C: Mutualism
- D: Predation

CELL BIOLOGY
TEST 1

1. The smallest independent unit of life is known as:

- A: Cell
- B: Bacterial colony
- C: Chloroplast
- D: DNA

2. Which of the following are colorless?

- A: Chloroplasts
- B: Chlorophyll
- C: Chromoplasts
- D: Leucoplasts

3. A chromosome is composed of which of the following?

- A: DNA only
- B: DNA and RNA
- C: DNA, RNA and Proteins
- D: DNA and Proteins

4. What is cytokinesis ?

- A: Separation of chromosomes
- B: Division of nucleus
- C: Division of whole cell
- D: Movement of whole cell

5. Plasma membrane is chemically composed of:

- A: Lipids and proteins
- B: Lipids and carbohydrates
- C: Phospholipids only
- D: Glycoproteins

6. Chiasmata formation takes place during the process which is known as?

- A: Crossing over
- B: Attachment
- C: Pairing
- D: Leptotene

7. Uncontrolled division occurs in which cells?

- A: Early embryonic cells
- B: Cancer cells
- C: Healing cells
- D: Growth and development cells

8. As per early cell theorists, which of the following was not a basic part of the cell?

- A: Nucleus
- B: Cytoplasm
- C: Plasma membrane
- D: Cell wall

9. Peptidoglycan and murein is special or distinctive feature of cell wall in :

- A: Algae
- B: Fungi
- C: Bacteria
- D: Plants

10. Cell membranes take in materials by infolding through a process called?

- A: Active transport
- B: Passive transport
- C: Selective permitivity
- D: Endocytosis

11. Which of the following structures is ansent in higher plants and found in animals cells?

- A: Cytoskeleton
- B: Mitochondria
- C: Cytoplasm
- D: Centriole

12. Which of the following is a prokaryote?

- A: Bacteria
- B: Fungi
- C: Protista
- D: Plants

13. Identify the wrong statment regarding crossing over ?

- A: It takes place during pachytene.
- B: Reshuffling of genetic material takes place.
- C: Sister chromatids exchange their segments.
- D: Involves chiasmata formation.

14. Animal and plant cells are distinguished by which of the following feature?

- A: Nucleus
- B: Cell wall
- C: Mitochondrion
- D: Golgi apparatus

15. What is the number of chromosomes in humans?

- A: 42
- B: 44
- C: 46
- D: 48

16. Prophase I in meiosis is furthure subdivide into how many phases ?

- A: 3
- B: 4
- C: 5
- D: 6

17. In mitochondria, a small knob like structures called F particles are present in :

- A: Outer membrane
- B: Inner membrane
- C: Outer compartment
- D: Inner compartment

18. What is the primary difference between Prokaryotes and Eukaryotes?

- A: Prokaryotes have cell wall and Eukaryotes lack it
- B: Prokaryotes have a tail and Eukaryotes lack it
- C: Prokaryotes do not have mitochondiron while Eukaryotes have it
- D: Prokaryotes do not have distint nuclues and Eukaryotes have a distint nuclues.

19. Which of the following is the wrong statment regarding apoptosis ?

- A: It take place in absence of survival signals.
- B: Content of cell are not relased in apoptosis.
- C: It is associated with inflamation.
- D: It involve the death of cell during embroygenesis.

20. Which one of the following is a down syndrome ?

- A: Trisomy 21
- B: Trisomy 13
- C: Trisomy 18
- D: Trisomy 22

TEST 2

1. What is the main difference between the molecules of chlorophyll and haem?

- A: Chlorophyll has potassium while haem has iron as the central atom.
- B: Chlorophyll has magnesium while haem has calcium as the central atom.
- C: Chlorophyll has iron while haem has potassium as the central atom.
- D: Chlorophyll has magnesium while haem has iron as the central atom.

2. Which scientist discovered the presence of nucleus in the cell?

- A: Robert Brown
- B: Lorenz Oken
- C: Robert Hooke
- D: Jean Baptist

3. Cell wall has how many layers?

- A: 2
- B: 3
- C: 4
- D: 5

4. The _____ model of plasma membrane suggests that protein are embedded in lipid bilayer:

- A: Unit membrane
- B: Ultracentrifuge
- C: Permeable
- D: Fluid mosaic

5. The inner foldings of mitochondria are called?

- A: Microfilaments
- B: Cisternae
- C: Cristae
- D: Grana

6. Cell membrane is chemically composed of which of the following?

- A: Lipids and carbohydrates
- B: Lipids and proteins
- C: Proteins and carbohydrates
- D: Proteins only

7. Separation of homologous chromosomes occurs in which one of the following phase of mitosis?

- A: Prophase
- B: Metaphase
- C: Anaphase
- D: Telophase

8. In which phase of cell division, the metabolic activity of nucleus is high?

- A: Mitosis
- B: Meiosis
- C: Interphase
- D: Cell cycle

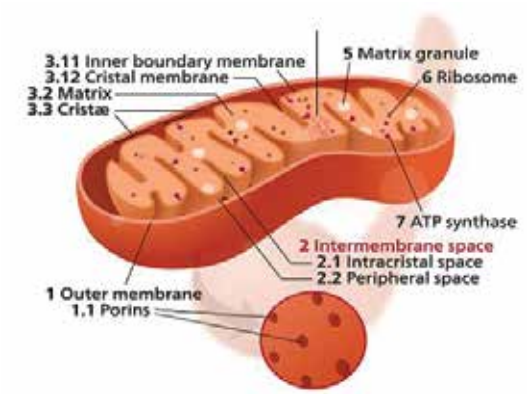
9. Plastids in the plant cells have how many types?

- A: 2
- B: 3
- C: 4
- D: 5

10. During metaphase, what number of fibers each kinetochore gets ?

- A: Two fibers from each poles
- B: Two fibers one from each pole
- C: One fiber from single pole
- D: Variable number of fibers

11. The following figure show which cell organelle?



- A: Mitochondria
- B: Vacuole
- C: Endoplasmic Reticulum
- D: Gogi apparatus

12. Cell theory was established based on the work by which of the following scientists?

- A: Robert Brown and Robert Hooke
- B: Theodor Schwann and Schleiden
- C: Lorenz Oken
- D: Jean Baptist

13. Which organelle is bounded by two membranes?

- A: Ribosomes
- B: Mitochondrion
- C: Lysosome
- D: Nucleolus

14. The interior of chloroplast is divided into heterogenous structure, embedded in matrix , known as ?

- A: Grana
- B: Stroma
- C: Thylakoid
- D: Cisternae

15. Identify the worng statment regarding meiosis?

- A: Number of chromosomes reduce to haif.
- B: It take palce in haploid cells.
- C: Four daughter cells are produced after meiosis.
- D: It take place during spore formation in plants.

16. Ribosomes are assembled in which part of the cell?

- A: Gogi apparatus
- B: Endoplasmic reticulum
- C: Mitochondrion
- D: Nucleolus

17. What is the approximate duration of G_1 phase in the human cell cycle ?

- A: 8 hours
- B: 9 hours
- C: 10 hours
- D: 11 hours

18. In which stage of interphase, there is increase in cell size and many biochemicals are formed?

- A: G_1 phase
- B: G_2 phase
- C: S phase
- D: C phase

19. Centrioles are made up of _____ microtubules.

- A: 9
- B: 3
- C: 12
- D: 27

20. What are the changes that takes place during telophase ?

- A: Unfolding of chromosomes.
- B: Mitotic apparatus disorganizes nuclear membrane.
- C: Reorganization of nuceloli.
- D: All of the above.

TEST 3

1. Which of the following organelle play an important role in the formation of cilia?

- A: Cytoskeleton
- B: Ribosomes
- C: Lysosomes
- D: Centriole

2. Ribosomes exist in two forms, either attached to RER or freely dispersed in the?

- A: Tonoplast
- B: Golgi bodies
- C: SER
- D: Cytoplasm

3. During cytokinesis a contractile ring is formed from which of the following?

- A: Actin and Tubulin.
- B: Myosin and Actin.
- C: Tubulin and Myosin
- D: Actin only

4. Microtubules are made up of which one of the following protein ?

- A: Actin
- B: Tubulin
- C: Myosin
- D: All of above

5. Which of the following syndrome's involves the missing of one X chromosome ?

- A: Down
- B: Turner
- C: Jacobs
- D: Patau

6. What is the main function of parenchymatous cells in plants?

- A: Transport water
- B: Translocate food
- C: Provide support
- D: Store surplus food

7. Which of the following in NOT a tenet of cell theory?

- A: All living organisms are composed of one or more cells.
- B: The cell is the most basic unit of life.
- C: All cells arise from pre-existing, living cells.
- D: Individual cells have a sexual reproduction.

8. Which of the following is termed as the factory of protein synthesis?

- A: Nucloelus
- B: Rough endoplasmic reticulum
- C: Ribosomes
- D: Mitochondrion

9. Identify the correct statement regarding prophase?

- A: Nuclear envelop disappears and nucleoli becomes more prominent.
- B: Nucleoli disappaers and mitotic apparatus becomes disorganised.
- C: Nuclear envelop disappears and cytoplasm becomes less viscous.
- D: Mitotic apparatus is organised and cytoplasm become more viscous.

10. Prokaryotic cell wall has which of the following major difference from the other cell walls?

- A: It lacks chitin.
- B: It lacks waxes.
- C: It lacks lignin.
- D: It lacks cellulose.

11. Which of the following organelle is present in plant cells but not in the animal cells?

- A: Peroxisome
- B: Mitochondrion
- C: Golgi apparatus
- D: Glyoxysomes

12. Mental retardation, short stature, broad faces and squint eyes are the symptoms of ?

- A: Down's syndrome
- B: Klinefelter's syndrome
- C: Turner's syndrome
- D: XYZ syndrome

13. During which phase of meiosis paired chromosomes repel each other and begin to separate ?

- A: Leptotene
- B: Zygotene
- C: Pachytene
- D: Diplotene

14. Which is /are the functions of mitotic apparatus ?

- A: To capture chromosomes
- B: To align chromosomes
- C: To separate chromosomes
- D: All of the above

15. Which of the following is not a basic component of the chloroplast?

- A: Envelope
- B: Grana
- C: Stroma
- D: Thylakoid

16. Which of the following shall most easily pass through the plasma membrane?

- A: Lipid soluble substances
- B: Ions
- C: Lipids insoluble substance
- D: Gas molecules

17. Extensive metabolic activity takes place in which one of the following phase of the cell cycle ?

- A: G_1 phase
- B: G_o phase
- C: G_2 phase
- D: S phase

18. Which of the following is responsible for phagocytosis in the cells?

- A: Gogi apparatus
- B: Lysosomes
- C: Ribosomes
- D: Rough ER

19. What is the main purpose of Sclerenchymatous cells in plants?

- A: Conduct water
- B: Translocate food
- C: Give support
- D: Store surplus food

20. How many microtubules are present in the cylindrical array of centriole?

- A: 5
- B: 7
- C: 9
- D: 11

TEST 4

1. The inner membrane of mitochondria is folded to form finger like structure called ?

- A: Cristae
- B: Vesicle
- C: Matrix
- D: Cisternae

2. In Down's syndrome which one of the following pair fails to seggregate?

- A: 7
- B: 19
- C: 18
- D: 21

3. Which one of the following microtubules get attached to chromosome during karyokinesis?

- A: Kinetochore microtubules
- B: Polar microtubules
- C: Astral microtubules
- D: All of the above

4. Which of the following statement is true?

- A: Only active transport requires energy.
- B: Only passive transport requires energy.
- C: Both active and passive transport required energy.
- D: Neither active nor passive transport requires energy.

5. Which of the following are present in the underground parts of the plant?

- A: Leucoplasts
- B: Chromoplasts
- C: Chloroplasts
- D: None of the above.

6. Which of the following statement is true?

- A: Prokaryotes have smaller sized ribosomes as compared to eukaryotes.
- B: Prokaryotes have larger sized ribosomes as compared to eukaryotes.
- C: Prokaryotes and eukaryotes have equal sized ribosomes.
- D: There is no relationship between the ribosomes of prokaryotes and eukaryotes.

7. Which of the following is not a characteristic of malignent cell ?

- A: High nucleus to cytoplasmic ratio.
- B: Prominent nucleoli.
- C: Highly differentiated.
- D: Large number of mitosis.

8. The function of nucleolus is to make:

- A: Rdna
- B: RNA
- C: Ribosomes
- D: Chromosomes

9. The most critical phase of mitosis which ensures equal distribution of chromatids in daughter cells is :

- A: Prophase
- B: Metaphase
- C: Anaphase
- D: Telophase

10. Genomic variations and modifications results from which of the following?

- A: Synapsis and crossing over.
- B: Synapsis and chromosomal non-disjunction.
- C: Crossing over and random assortment of chromosomes.
- D: Chromosomal non-disjunction and breakage.

11. 44 autosomes + XXY is a genotype of which one of the following syndrome ?

- A: Down
- B: Patau
- C: Klinefelter
- D: Jacobs

12. Endoplasmic recticulum contains a system of flattened membrane bounded sacs which are named as:

- A: Cristae
- B: Marks
- C: Tubules
- D: Cisternae

13. Golgi apparatus converts proteins and lipids into glycoproteins and glycolipids by adding?

- A: Minerals
- B: Mg^{+2} ions
- C: Carbohydrates
- D: All of the above.

14. Identify the correct statement regarding mitosis in plants ?

- A: Spindle fibers arise from centriols.
- B: A contractile rings is formed during cytokinesis.
- C: Shapes of plant cell does not change greatly.
- D: Phragmoplast does not get formed.

15. How many triplets of microtubules are present in a centriole?

- A: 10
- B: 8
- C: 9
- D: 7

16. Granulocytes are :

- A: Monocytes, eosinophils, basophils
- B: Eosinophils, basophils, neutrophils
- C: Basophils, Macrophages, neutrophils
- D: Monocytes, macrophages , basophils

17. By using histologic stain of DNA, a network of very fine threads can be visualized during the prophase of mitosis. The network is called?

- A: Mitotic apparatus
- B: Chromosomes
- C: Chromatin
- D: Hyperchromasia

18. Which of the following imparts colors to the plants other than green?

- A: Chloroplasts
- B: Leucoplasts
- C: Chromoplasts
- D: All of the above.

19. How many sets of microtubules arise from each pair of centriole during karyokinesis?

- A: 2
- B: 3
- C: 4
- D: 5

20. Plastids are only found in the:

- A: Animals
- B: Animals and plants
- C: Plants
- D: Viruses

BIOLOGICAL MOLECULES
TEST 1

1. The branch of biology that deals with the study of inorganic and organic molecules that make up the body of living orgnism is called?

- A: Biotechnology
- B: Anatomy
- C: Biomechanics
- D: Biochemistry

2. Which of the following biological molecule is the richest source of energy? (comparing gram to gram)

- A: Carbohydrates
- B: Fats
- C: Minerals
- D: Protein

3. About 170 types amino acids are known, however, most of the proteins are made up of _____ types of amino acids?

- A: 108
- B: 64
- C: 32
- D: 20

4. The covalent bond formed between two monosacchrides is called ?

- A: Glycosidic bond
- B: Hydrogen bond
- C: Peptide bond
- D: Disulphide bond

5. Which of these is not a nucleotide base found in the DNA?

- A: Uracil
- B: Adenine
- C: Guanine
- D: Thymine

6. Energy absorbed in order to change water from liquid to gas is called?

- A: Latent heat of fusion
- B: High surface tension
- C: Heat of vaporization
- D: High heat capacity

7. What is the valency of carbon?

- A: Monovalent.
- B: Bivalent.
- C: Trivalent.
- D: Tetravalent.

8. Which of the following is true about a chemical "buffer"?

- A: It can donate a hydrogen+ when solution becomes too basic
- B: It can absorb hydrogen+ when solution becomes too acidic
- C: It is utilized in living systems to maintain correct pH
- D: All of the above are correct

9. In an amino acid in which the R-group is a hydrogen, the amino acid will be ?

- A: Alanine
- B: Glycine
- C: Leusine
- D: Valine

10. A fatty acid is a compound having a chain of carbon atoms with?

- A: An acid group at both ends
- B: An acid group at one end
- C: An amino group
- D: An amino group at both ends

11. Which class of molecules is the major component of the cell membrane?

- A: Phospholipids
- B: Cellulose
- C: Proteins
- D: Triglycerides

12. The sum of all the chemical reaction that occurs in the body is known as?

- A: Anabolism
- B: Metabolism
- C: Catabolism
- D: Canabalism

13. Dehydration and hydrolysis reactions involve removing or adding which of the following to macromolecule subunits?

- A: C and H
- B: CH and NH_2
- C: -COOH and H
- D: OH and H

14. Which of the following base pair combination is absent in DNA?

- A: A-T
- B: T-A
- C: C-G
- D: A-U

15. When amino acids in a polypeptide chain are arranged in a spiral manner, it is called?

- A: Primary structure
- B: Secondary structure
- C: Tertiary structure
- D: Quaternary structure

16. The amount of heat that must be absorbed or lost by 1g of a substance to change its temperature by 1 C° is known as?

- A: Specific heat
- B: Heat of vaporization
- C: Enthalpy
- D: Entropy

17. One of the pyrimidine bases absent in DNA is?

- A: Uracil
- B: Thymine
- C: Cytosine
- D: Adenine

18. Which of the following is an organic molecule?

- A: $CaCO_3$
- B: CO_2
- C: $C_6H_{12}O_6$
- D: All of the above.

19. Fatty acids are the organic compounds containing hydrogen, oxygen and one of the following are ?

- A: Carboxylic
- B: Amino
- C: Acyl
- D: Sucrose

20. Electrolytes that release hydrogen ions in water are called?

- A: Acids
- B: Bases
- C: Amphoterics
- D: Lipids

TEST 2

1. What kind of sugar is found in the RNA?

- A: Fructose
- B: Galactose
- C: Deoxyribose
- D: Ribose

2. Natural monosaccharide contain how many carbon atoms?

- A: 3-5
- B: 4-8
- C: 3-7
- D: 5-13

3. Amino acid in which R-group is hydrogen is:

- A: Alanine
- B: Valine
- C: Leucine
- D: Glycine

4. The bond formed between glucose and fructose to form sucrose is ?

- A: 1,4 glycosidic linkage
- B: 1,2 glycosidic linkage
- C: 1,6 glycosidic linkage
- D: 1,3 glycosidic linkage

5. The synthesis of RNA from the DNA is called?

- A: Transcription.
- B: Replication.
- C: Duplication.
- D: Transformation.

6. Nucleic acids are the polymers composed of monomer units known as?

- A: Amino acids
- B: Nucleosides
- C: Nucleotides
- D: Nitrogenous bases

7. Which product is the energy storage in the vertebrate, liver and muscles of the animals?

- A: Cellulose
- B: Chitin
- C: Glycogen
- D: Fructose

8. Which of the following is an unsaturated fatty acid?

- A: Butyric acid.
- B: Palmitic acid.
- C: Acetic acid.
- D: Oleic acid

9. Which of the following statements about amino acids is correct?

- A: Amino acids are classified according to the structures and properties of their side chains.
- B: Amino acids are uncharged at neutral pH.
- C: Amino acids in proteins are mainly in the D-configuration.
- D: Twenty four amino acids are commonly used in protein synthesis.

10. Which of the following is a keto sugar?

- A: Glyceraldehyde
- B: Ribose
- C: Dihydroxy acetone
- D: Glucose

11. Lipids are found in the human body as which of the following?

- A: Triglyceride
- B: Phospholipid
- C: Cholestrol
- D: All of these

12. Each of the 20 naturally occuring amino acids has a different?

- A: NH_2 group
- B: -COOH group
- C: -OH group
- D: R group

13. Lactose is present in which of the following?

- A: Sugar cane
- B: Milk
- C: Egg
- D: Fruits

14. Which type of RNA acts as a machinery for the synthesis of proteins?

- A: mRNA
- B: tRNA
- C: rRNA
- D: All of the above.

15. The two chains of DNA are held together by what type of bonds?

- A: Ionic bonds
- B: Colavent bonds
- C: Disulphide bonds
- D: Hydrogen bonds

16. The step of protein synthesis in which RNA is synthesized by the DNA is called?

- A: Transduction
- B: Translation
- C: Transformation
- D: Transcription

17. Which of the following is the most abundant molecule in the living cells?

- A: Lipids
- B: Carbohydrates
- C: Water
- D: Proteins

18. Myosin is a _____ type of protein.

- A: Intermediate
- B: Simple
- C: Globular
- D: Fibrous

19. The four nitrogenous bases which form the code words for DNA language are?

- A: ACTU
- B: UTAC
- C: AGTU
- D: AGCT

20. _____ is most abundant in nature.

- A: Cellulose
- B: Waxes
- C: Glycerole
- D: Starch

TEST 3

1. Which of the following type of RNAs is the major portion of RNA in the cell?

- A: mRNA
- B: tRNA
- C: rRNA
- D: They are all in the same quantity.

2. Which of the following is true about haemoglobin?

- A: It is a globular protein.
- B: It has quaternary level of protein structure.
- C: It has haem units.
- D: All of the above.

3. Typically a cell has how many tRNAs?

- A: 5
- B: 10
- C: 15
- D: 20

4. Which of the following is an asymmetrical lipid molecules with a hydrophilic head and a hydrophobic tail, with a phosphate group in place of one of the three fatty acid chains?

- A: Wax
- B: Terpenoid
- C: Steroid
- D: Phospholipid

5. Which of the following is not a function of lipids?

- A: Long term energy storage.
- B: Insulation against atmospheric heat and cold.
- C: Water proofing.
- D: Enzymes

6. Which one of the following carbohydrates is the sweetest in taste?

- A: Glucose
- B: Fructose
- C: Lactose
- D: Maltose

7. Which one of the following types of bond is principally concerned in maintaining the alpha-helix shape of secondary protein structure?

- A: Disulphide bonds.
- B: Ester bonds.
- C: Hydrogen bonds.
- D: Peptide bonds.

8. The number and sequence of amino acids in the proteins refers to which of the following structure?

- A: Primary structure.
- B: Secondary structure.
- C: Tertiary structure.
- D: Quaternary structure.

9. Acylglycerols like fats and oils are esters formed by condensation reaction between:

- A: Fatty acids and water
- B: Fatty acids and glucose
- C: Fatty acids and alcohol
- D: Fatty acids and phosphates

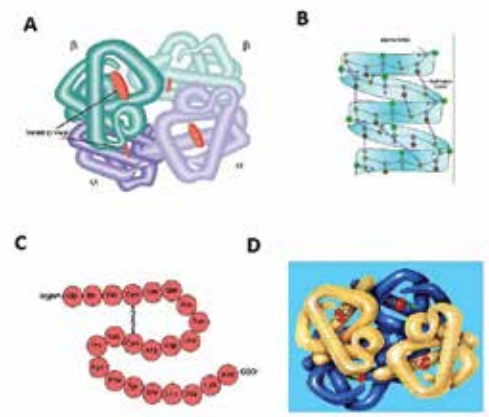
10. Carbon combines with nitrogen in amino acid linkages to form which of the following?

- A: Ester bonds
- B: Glycosidic bonds
- C: Peptide bonds
- D: Hydrogen bonds

11. The combination of a pentose sugar with a base results in a compound known as ?

- A: Nucleotide
- B: Nucleic acid
- C: Nucleoside
- D: Polynucleotide

12. Which of the following is the primary structure of protein?



- A: A
- B: B
- C: C
- D: D

13. Which one are intermediate between respiration and photosynthesis both?

- A: Glyceraldehyde and Dihydroxyacetone
- B: Ribose and Heptolose
- C: Glucose and Glactose
- D: Fructose and Ribulose

14. Which of the following statement is correct?

- A: DNA is only present in the nuclei of the cells.
- B: RNA is only present in the nuclei of the cells.
- C: DNA occurs in chromosomes while RNA is present in nucleolus, ribosomes and cytosol.
- D: RNA occurs in chromosomes while DNA is present in nucleolus, ribosomes and cytosol.

15. The bond formed between carboxylic acid and alcohol is called?

- A: Ester bond
- B: Amide bond
- C: Phosphate bond
- D: Ionic bond

16. Which disaccharide is found in the sugar cane?

- A: Maltose
- B: Sucrose
- C: Lactose
- D: Isomaltose

17. Which bond is present in the tertiary structure of proteins?

- A: Ionic Bond
- B: Hydrogen bond.
- C: Disulfide bond.
- D: All of the above.

18. Which one of the following is not a monosaccharide?

- A: Glyceraldehyde.
- B: Ribose.
- C: Lactose.
- D: Glucose.

19. Which of the following is not a monosaccharide?

- A: Sucrose.
- B: Maltose
- C: Lactose.
- D: All of the above.

20. The lipids made up of simple repeating isoprenoid units are called?

- A: Phospholipids
- B: Acylglycerols
- C: Waxes
- D: Terpenoids

TEST 4

1. Which of the following is an unsaturated fatty acid?

- A: Acetic acid
- B: Butyric acid
- C: Palmitic acid
- D: Oelic acid

2. Which of the following is purine?

- A: Cytosine
- B: Thymine
- C: Uracil
- D: Guanine

3. The most abundant carbohydrate in the nature is?

- A: Glycogen
- B: Chitin
- C: Lignin
- D: Cellulose

4. Which of the following lipids is a mixture of long chain alkanes with odd number of Carbons and alcohols, ketones and esters?

- A: Acylglycerols
- B: Terpenoids
- C: Waxes
- D: Phospholipids

5. Steroids are classified as?

- A: Carbohydrates
- B: Lipids
- C: Proteins
- D: Nucleic acids

6. Animals obtain carbohydrates mainly from which of the following?

- A: Starch
- B: Glucose.
- C: Glycogen.
- D: Sucrose.

7. What is the difference between the two types of starch, amylose and amylopectin?

- A: Amylose starches have unbranched chains of glucose and amylopectin starches have branched chains.
- B: Amylose starches are soluble in hot water and amylopectin starches are insoluble.
- C: Amylose starches have chains of glucose and amylopectin starches have chains of fructose.
- D: Both A and B.

8. How many nitrogenous bases are there in total for the nucleic acids?

- A: Four
- B: Five
- C: Six
- D: Seven

9. Which of the following shows a monosaccharide, a disaccharide and a polysaccharide in the sequence?

- A: Starch ; Glucose ; Sucrose
- B: Starch ; Sucrose; Glucose
- C: Sucrose; Glucose ; Starch
- D: Glucose; Sucrose; Starch

10. Which one is an example of unsaturated fatty acids :

- A: Butyric acid
- B: Oleic acid
- C: Palmitic acid
- D: Acetic acid

11. The primary structure of protein is the?

- A: Twisting and turning of the polypeptide.
- B: Number and sequence of amino acids in the protein molecule.
- C: Specific orientation of polypeptide in space.
- D: Both A and B

12. tRNA transfer which of the following?

- A: Lipids
- B: Carbohydrates
- C: Amino acids
- D: All of the above.

13. Which form of RNA delivers the information from DNA to be used in making a protein?

- A: Messenger RNA
- B: Ribosomal RNA
- C: Transfer RNA
- D: All options are correct.

14. Carbohydrates are organic molecules and contain three elements:

- A: Carbon,water and oxygen
- B: Carbon,hydrogen,oxygen
- C: Carbon,sulphur,hydrogen
- D: Carbon,calcium, hydrogen

15. Monosachride are major compoenents of :

- A: DNA, ATP, Ribulose bisphophate and cysteine
- B: DNA, NAD and Insulin
- C: DNA, NADP, ATP and ribulose bisphosphate
- D: DNA, RNA and myosin

16. When a protein undergoes a hydrolysis reaction the end products are?

- A: Amino acids
- B: Monosaccharides
- C: Fatty acids
- D: Nucleotides

17. The covalent bond between two monosaccharides is called?

- A: Peptide bond.
- B: Covalent bond.
- C: Glycosidic bond.
- D: Ester bond.

18. Which of the structures in the list includes all others in the list?

- A: Nucleic acid
- B: Nucleotide
- C: Purine
- D: Nitrogenous base

19. The most abundant compound in the living orgnisms that makes up the two third of the weight of the adults is?

- A: Water
- B: Carbohydrates
- C: Lipids
- D: Proteins

20. Which one of the following is called the medium of life?

- A: Water.
- B: Lymph.
- C: Blood.
- D: Carbon.

ENZYMES
TEST 1

1. **All coenzymes are derived from?**

- A: Proteins
- B: Carbohydrates
- C: Metal ions
- D: Vitamins

2. **All coenzymes are derived from:**

- A: Proteins
- B: Nucleic acid
- C: Vitamins
- D: Carbohydrates

3. **Enzymes increase the rate of reaction by ?**

- A: Increasing temperature
- B: Decreasing pH
- C: Decreasing activation energy
- D: Increasing activation energy

4. **Which molecular strauctur of enzyme is essential for activity of enzyme?**

- A: Quaternary structure
- B: Primary structure
- C: Secondary structure
- D: Tertiary structure

5. **Which molecular strauctur of enzyme is essential for activity of enzyme?**

- A: Quaternary structure
- B: Primary structure
- C: Secondary structure
- D: Tertiary structure

6. **Which one of the following is a competitive inhibitor?**

- A: Glucose
- B: Fumerate
- C: Succinic acid
- D: Malonate

7. **Optimum temperature for most of the human enzymes is?**

- A: 37 degree centigrades
- B: 41 degree centigrades
- C: 45 degree centigrades
- D: 25 degree centigrade

8. **Enzymes are primarily?**

- A: Proteins
- B: Lipids
- C: Carbohydrates
- D: None of the above.

9. **Some enzymes require a non protein part for its efficient functioning. This helper non protein part is called :**

- A: Accelator
- B: Cofactor
- C: Prosthetic group
- D: Apoenzyme

10. **What is the main effect of the inhibitors on the enzyme catalytic activity?**

- A: The enhances the speed of reaction.
- B: They increase the availability of active sites on the enzyme.
- C: They reduce the reaction rate.
- D: None of the above.

11. An enzyme and substrate reacts through a special feature or site present on enzyme known as ?

- A: Building site
- B: Catalytic site
- C: Active site
- D: Inhibition site

12. What is the effect of the increase in the substrate concentration on the enzymatic reaction?

- A: It increases the rate of reaction.
- B: It decreases the rate of reaction.
- C: It has no effect on the rate of reaction.
- D: It increases the rate of reaction but upto a certain limit.

13. The enzymes which act as molecular scissors in recombinant technology are :

- A: Exonucleases
- B: Endonucleases
- C: Polymerases
- D: All of the above

14. Doubling the enzyme concentration has what effect on the rate of reaction?

- A: Rate of reaction remains same.
- B: Rate of reaction doubles.
- C: Rate of reaction increase by three times.
- D: Rate of reaction increase by four times.

15. If enzyme concentration is continuously increased, what is the effect on the rate of reaction?

- A: It increases continuously.
- B: There is no increase in the rate of reaction.
- C: It increases to a certain level after that it will remain constant.
- D: It increases to a certain level after that it decreases.

16. Active site of an enzyme has how many definite regions?

- A: 2
- B: 3
- C: 4
- D: 5

17. Enzymes catalytic activity is limited to a small portion called?

- A: Co-factor
- B: Coenzyme
- C: Active site
- D: Passive site

TEST 2

1. **A cofactor tightly bound to the enzyme on permanent basis is called :**

- A: Activator
- B: Co-enzyme
- C: Apo-enzyme
- D: Prosthetic group

2. **Enzyme succinate dehydrogenase coverts succinate into:**

- A: Malate
- B: Malonic acid
- C: Fumarate
- D: Citrate

3. **The view that active site of an enzyme is flexible and when a substrate combines with it, cause changes in enzyme structure is known as:**

- A: Lock and key model
- B: Induce fit model
- C: Sliding filament model
- D: Specificity model

4. **The type of inhibition in which inhibitors has no structural similarity to substrate and combines with enzyme at other than the active site are called?**

- A: Irreversible inhibitors
- B: Reversible inhibitors
- C: Competitive inhibitors
- D: Non competitive inhibitors

5. **Non-protein part of the enzyme which is essential for the proper functioning of the enzyme is called?**

- A: Active site
- B: Passive site
- C: Coenzyme
- D: Cofactor

6. **Who proposed the Lock and Key model to visualize the enzyme substrate interaction?**

- A: Koshland
- B: Meldeev
- C: Emil Fischer
- D: Robert Fisk

7. **Which of the following statement regarding enzymes is NOT true?**

- A: Some enzyme have metal ions as co-factors.
- B: Enzymes are compounds of hundreds of amino acids.
- C: Enzymes have globular structure.
- D: Enzymes alter the nature and properties of end products.

8. **If detachable co-factor is an inorganic ion then it is designated as:**

- A: Co enzyme
- B: Prosthetic group
- C: Activator
- D: Holoenzyme

9. **The competitive inhibitors have structural similarity with?**

- A: Activator
- B: Co-enzyme
- C: Prosthetic group
- D: Apo-enzyme

10. The non protein part of enzyme which is covalently and permanently bound is called ?

- A: Prosthetic group
- B: Co factor
- C: Co enzyme
- D: Activator

11. The inhibitors that bind tightly and permanently to enzymes and destroy their globular structure and catalytic activity are:

- A: Irreversible inhibitors
- B: Reversible inhibitors
- C: Competitive inhibitors
- D: Non-competitive inhibitors

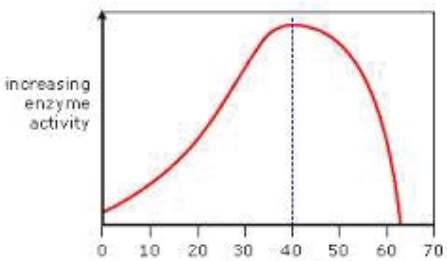
12. An enzyme with its prosthetic group removed is called?

- A: Co-enzyme
- B: Holoenzyme
- C: Apoenzyme
- D: Activator

13. Co-factors have which of the following function?

- A: Act as a bridge between the enzyme and the substrate.
- B: Provide a source of chemical energy.
- C: Contributes directly to the chemical reaction.
- D: All of the above.

14. The graph below shows the effect of which of the following on the enzyme reaction?



- A: Enzyme concentration.
- B: Substrate concentration.
- C: Temperature
- D: pH

TEST 3

1. Which of the following form a weak linkage with the enzyme?

- A: Irreversible inhibitor.
- B: Reversible inhibitor.
- C: Prosthetic group.
- D: Cofactor.

2. What is the optimum pH for enzyme Pepsin?

- A: 1.00
- B: 2.00
- C: 4.50
- D: 5.50

3. If the cofactor is covalently bonded to enzyme then it will be called:

- A: Coenzyme
- B: Activator
- C: Apoenzyme
- D: Prosthetic group

4. Which of the following describes the prosthetic group i an enzyme?

- A: Loosely bound co-enzymes.
- B: Tightly bound co-enzymes.
- C: A detachable organic co-factor.
- D: A detachable inorganic co-factor.

5. Pepsin is produced in an inactive pepsinogen form because?

- A: This is the only possible way to produce it.
- B: It is not required to work in the early stages of its life.
- C: It is less energy intensive to produce pepsinogen than pepsin.
- D: It does not digest the internal organ cells.

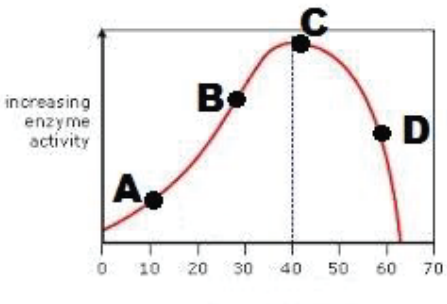
6. What is the main property of non-competitive inhibitors?

- A: They do not reduce the rate of enzyme reaction.
- B: The form the enzyme inhibitor complex at the site other than the active site.
- C: The form the enzyme inhibitor complex on the active site.
- D: They are always protein in nature.

7. Optimum pH value for working of pancreatic lipase is:

- A: 4.5
- B: 7.6
- C: 9.0
- D: 2.0

8. **The graph below is between the enzymatic rate of reaction and temperature. What is the point in the graph where denaturing starts happening?**



- A: A
- B: B
- C: C
- D: D

9. **In which of the following cases, the enzyme shall not perform its function?**

- A: Enzyme missing its co-factor.
- B: Apoenzyme
- C: Non-availability of activator.
- D: All of the above.

10. **Enzymatic reactions are most sensitive to which of the following?**

- A: Concentration of enzyme.
- B: Concentration of substrate.
- C: Temperature
- D: pH

11. **What is the main deviation of induced fit model from the lock and key model?**

- A: Induced fit model proposed that enzymes active site is a rigid structure.
- B: Induced fit model proposed that the activation site is much small than the one proposed by the lock and fit model.
- C: Induced fit model proposed that the substrate can change the structure of the enzyme.
- D: All of the above.

12. **Which of the following statement defines the activator in an enzyme?**

- A: An organic permanent co-factor.
- B: An inorganic permanent co-factor.
- C: An organic detachable co-factor.
- D: An inorganic detachable co-factor.

BIOENERGETICS
TEST 1

1. **Photosystem II has chlorophyll a molecules in it which absorbs maximum light of _____ wavelength.**

- A: 650nm
- B: 680nm
- C: 700nm
- D: 720nm

2. **Which one is the most abundant protein on earth?**

- A: Keratin
- B: Rubisco
- C: Thrombin
- D: None of these

3. **How many types of photosystems are there?**

- A: 1
- B: 2
- C: 3
- D: 4

4. **Photosynthesis is a _____ process.**

- A: Oxidation
- B: Reduction
- C: Redox
- D: Ionic

5. **What is required during pyruvate -------> Acetyl CoA ?**

- A: NAD^+
- B: FAD
- C: FADH
- D: NADPH

6. **Magnesium is an important nutrient ion in green plants as it is an essential component of:**

- A: Cell sap
- B: Protein
- C: Chlorophyll
- D: Glucose

7. **Carriers of respiratory chain are located on :**

- A: Matrix of mitochondria
- B: Inner membrane of mitochondria
- C: Outer membrane of mitochondria
- D: Cytoplasmic matrix

8. **During light dependent reactions, assimilating power in the form _____ is formed.**

- A: $NADPH_2$
- B: ATP
- C: $NADPH + H^+$
- D: All of these

9. **The respiratory chain is also known as:**

- A: Electron transport system
- B: Intermediate chain
- C: Carrying chain
- D: All of these

10. **Calvin cycle is a:**

- A: Light dependent cycle
- B: Light independent cycle
- C: Non-cyclic
- D: Occurs in chloroplast

11. The folds present in the mitochondria are called?

- A: Cisternae
- B: F- foldings
- C: Cristae
- D: Cilia

12. Which chlorophyll is the most abundant one?

- A: Chlorophyll a
- B: Chlorophyll b
- C: Chlorophyll c
- D: Chlorophyll d

13. The reactions of photosynthesis consist of how many parts?

- A: 1
- B: 2
- C: 3
- D: 4

14. In glycolysis, glycerate 1,3 bisphosphate is converted into glycerate-3-phosphate by losing _____ phosphate molecules.

- A: 1
- B: 2
- C: 3
- D: 4

15. Before entering into Kreb's cycle, the pyruate is first decarboxylated and oxidized into ?

- A: Alpha ketoglutaric acid
- B: Citric acid
- C: Glyceric acid
- D: Acetic acid

16. Where does the dark reactions take place ?

- A: Thylakoids
- B: Lumen
- C: Grana
- D: Stroma

17. Mitochondria is also known as:

- A: Controlling center of the cell
- B: Nucleus of the cell
- C: Transporting medium
- D: Power house of the cell

18. Malate is oxidized by _____ to oxaloacetate in Krebs cycle.

- A: ATP
- B: NAD
- C: FAD
- D: NADPH

TEST 2

1. If lactic acid builds up in thigh muscles it cause tiredness and pain. this condition is called :

- A: Muscle fatigue
- B: Tetany
- C: Cramps
- D: Oxygen debt in muscles

2. The electrons from Ferredoxin (Fd) are transfered to NADP with the help of?

- A: Electron transport chain
- B: Fd reductase
- C: NADP reductase
- D: All of these

3. **Chlorophyll b and carotenoids are also called?**

- A: Normal pigments
- B: Necessary pigments
- C: Accessory pigments
- D: Common pigments

4. **The first action spectrum was given while working on _____?**

- A: Yeast
- B: Leaves
- C: Spirogyra
- D: Plant buds

5. **Every molecule of NADH, fed into electron chain produces:**

- A: 6 ATP
- B: 4ATP
- C: 2 ATP
- D: 3 ATP

6. **Final acceptor of electrons in repiratory chain is:**

- A: Cytochrome-A
- B: Oxygen
- C: Cytochrome-A_3
- D: Cytochrome-C

7. **The citrate is formed in the first step of kreb's cycle, what is the number of carbon atoms in the citrate?**

- A: 2
- B: 4
- C: 5
- D: 6

8. **What is the other name for calvin cycle?**

- A: Z-scheme
- B: Calvin chain
- C: C_3-pathway
- D: C_2 - pathway

9. **When the chloroplast run low on ATP, which photosystem is involved?**

- A: Photosystem **I**
- B: Photosystem **II**
- C: Both Photosystem **I** and **II**
- D: Photosystem **III**

10. **Oxidative phosphorylation, synthesis of ATP in presence of oxygen occurs in ?**

- A: All types of cells
- B: All anaerobic cells
- C: All primitive cells
- D: All aerobic cells

11. **What is the colour for chlorophyll a?**

- A: Violet-blue
- B: Yellow-green
- C: Blue-green
- D: Orange-red

12. **What does $NADPH_2$ provides during the dark reactions?**

- A: Energized electron only
- B: H^+ only
- C: Both Energized electron and H^+
- D: H_2

13. **Light can only work in chloroplast if it is absorbed. Which one of the following absorbs the visible light?**

- A: Thylakoids
- B: Stroma
- C: Pigments
- D: All of these

14. Which of the following oxidation reduction substance does not take part in respiratory chain:

- A: Coenzyme Q
- B: FAD
- C: Cytochromes enzymes
- D: Molecular oxygen

15. Total NADH formed by one glucose molecule during the Kreb's cycle are:

- A: 3
- B: 6
- C: 8
- D: 18

16. What will be the net input when the net output in the calvin cycle is 1 G3P (a carbohydrate)?

- A: $2CO_2$
- B: $3CO_2$
- C: $4CO_2$
- D: $1CO_2$

17. A system of membranes present in the stroma forms an elaborate interconnected set of flat, disc like sacs , which are called?

- A: Lumen
- B: Thylakoid interior space
- C: Thylakoids
- D: Grana

18. What is the correct order for the transfer of energy in case of chlorophylls?

- A: $Carotenoids \rightarrow Chlorophyll_{\mathbf{a}}$
- B: $Carotenoids \rightarrow Chlorophyll_{\mathbf{a}} \rightarrow Chlorophyll_{\mathbf{b}}$
- C: $Carotenoids \rightarrow Chlorophyll_{\mathbf{b}} \rightarrow Chlorophyll_{\mathbf{a}}$
- D: $Chlorophyll_{\mathbf{a}} \rightarrow Carotenoids \rightarrow Chlorophyll_{\mathbf{b}}$

19. The water splitting step of the photosynthesis is called _____?

- A: Cyclic Phosphorylation
- B: Non- cyclic Phosphorylation
- C: Photolysis
- D: None of these

20. The head of chlorophyll is is a complex porphyrin ring. This porphyrin ring is made up of?

- A: 2 Pyrrole rings
- B: 2 Phytols
- C: 4 Pyrrole rings
- D: 4 Phytols

TEST 3

1. What kind of wavelengths are mostly absorbed by chlorophylls?

- A: Green
- B: Orange-red
- C: Yellow
- D: Indigo

2. The oxidative phase of glycolysis is also called?

- A: Energy investment phase
- B: Energy pay off phase
- C: Preparatory phase
- D: All of these

3. **The electron transport chain of photosystem II does not contain:**

- A: Fd
- B: Two cytochrome complex
- C: Pq
- D: Pc

4. **How many stages of cellular respiration occur in the mitochondria?**

- A: 1
- B: 2
- C: 3
- D: 4

5. **How many ATP's are used for the synthesis of one carbohydrate molecule?**

- A: 3
- B: 4
- C: 6
- D: 9

6. **The end product of anaerobic respiration in humans and other animals is:**

- A: Pyruvic acid
- B: Ethanol
- C: Lactic acid
- D: Glucose

7. **The pathway in which the electrons passes through both the photosystems is called?**

- A: Cyclic phosphorylation
- B: Chemiosmosis
- C: Z-scheme
- D: Calvin cycle

8. **One molecule of $FADH_2$ is produced in Kreb's cycle during conversion of:**

- A: Succinate ------> Fumarate
- B: Fumarate -------> Malate
- C: Malate -> Oxaloacetate
- D: α-ketoglutarate -----> Succinate

9. **The dense fluid-filled region present in the double membrane envelope of the chloroplast, containing most of the enzymes required to produce carbohydrates, is called ?**

- A: Thylakoids
- B: Granum
- C: Stroma
- D: Lumen

10. **Calvin cycle begins when a molecule of CO_2 reacts with a highly reactive five carbon sugar ?**

- A: RUBP
- B: G3P
- C: Rubisco
- D: Ribulose phosphate

11. **The acetyl Coenzyme A on entering the kreb's cycle reacts with _____ to form 6 carbon citrate.**

- A: Malate
- B: Citrate
- C: Fumarate
- D: Oxaloacetate

12. **In electron transport chain, the electron from NADH and $FADH_2$are passed to :**

- A: Cytochrome a
- B: Cytochrome a_2
- C: Co-enzyme c
- D: Co-enzyme Q

13. **Puyruvate is the end product of glycolysis, enters from cytosol to mitochondrial matrix, which is oxidated into _____ producing CO_2 as by product?**

- A: Acetyl CoA
- B: Citerate
- C: NAD
- D: FAD